

REMARKS

Claims 1-24 are now present in the application, with new claims 21-24 being added by the present Amendment. Claims 1 and 17 are independent.

Claim Rejections under 35 U.S.C. § 112

The Examiner has rejected claims 1-20 under 35 U.S.C. § 112, second paragraph. This rejection is respectfully traversed.

Initially, with regard to independent claim 1, although Applicant does not necessarily agree with the Examiner's rejection, claim 1 has been revised in a manner somewhat similar to that suggested by the Examiner (e.g. "configured to control"). Furthermore, the term "useful signal" has been changed to "desired signal including image information" to clarify what was initially meant by use of the term "useful". In addition, many of the claims (including additional aspects of claim 1) have been amended in a non-narrowing fashion in an effort to place the claims in better form for U.S. practice. Such amendments have not been made for any reasons relating to patentability.

The Examiner has further rejected claims 1-20 as allegedly being incomplete for omitting essential elements, namely the element of the X-ray source. Applicant respectfully traverses this rejection by indicating that while an X-ray source is inferentially referenced by inferentially referencing X-radiation, the X-ray source is not an essential element of the claim. The claim is entitled to refer to elements in an inferential manner. Both independent claims 1 and 17 are open-ended claims (using the term "comprising"), and thus

can include additional elements which are not explicitly recited therein, although these elements need not be expressly claimed and thus need not be part of the claimed subject matter. As each of claims 1 and 17 are directed to the operation of systems other than a particular X-radiation source, the claims need not expressly include an element of an X-ray source.

The claims have been clarified to make it clear that they are for a device using X-radiation during examination, to even further clarify what is meant by the term "absence of X-radiation". Accordingly, withdrawal of the Examiner's rejection is respectfully requested.

Finally, the Examiner has rejected claims 5 and 10-16 under 35 U.S.C. § 112, second paragraph, alleging that the claims are incomplete for omitting the element of a C-arm. Again, the C-arm is not an essential component of the claim in that, even in the dependent claim form, the generally phrased term "face-angle sensor" does not necessarily require a C-bend or a C-arm. The angled transmitter simply must detect the angle of X-radiation. Thus, it can be detected in a number of ways including but not limited to, with the aid of a C-bend or at the X-ray radiator, for example if the X-radiator and the X-ray amplifier are mounted separately.

Accordingly, Applicant is entitled to set forth the claims in a broad manner, and no further limitations are required to make the claims fully operative. Again, these are dependent claims that are dependent upon open-ended independent claims. Accordingly, withdrawal of the Examiner's rejection is respectfully requested.

Prior Art Rejections

The Examiner has rejected claims 1-3, 6 and 17-20 under 35 U.S.C. § 102(e) as being anticipated by Tamura et al. (U.S. Patent Publication No. 2002/0186813 A1, the Tamura '813 publication). This rejection is respectfully traversed.

Claims 1 and 17

As indicated above, each of independent claims 1 and 17 have been amended in an effort to place the claims in better form for U.S. practice. For example, claim 1 has been amended to clarify that the system control is figured to control, when an external trigger pulse occurs at a point in time at which no read-out of the CCD is to take place, triggering of a read-out of the CCD camera without a desired signal including image information and subsequently triggering an exposure of the CCD camera. Further, the claim has been amended to state that when an external trigger pulse occurs at a point in time at which read-out of a CCD camera is to take place, a read-out without a desired signal including image information is suppressed before an exposure of the CCD camera.

As such, an additional read-out process of a type of dark signal, e.g. a signal without a desired signal including image information, is almost always triggered when an external trigger appears, despite periodic readout of the CCD camera. Applicant's method thereby essentially enables the system to improve upon or even overcome problems of the prior art wherein accumulated dark signals were only read out at regular intervals. Since various problems, as outlined in the present Specification, tend to occur at irregular intervals, such problems occurring at irregular intervals could not be

improved upon or overcome until the discovery of Applicant's invention, as set forth independent claims 1 and 17 for example.

Tamura '813 Publication

The Examiner utilizes that Tamura '813 publication in an effort to reject independent claims 1 and 17 of the application. However, the Examiner references a discussion in the Tamura '813 publication which relates to a prior art system, and not the system invented by the Tamura '813 publication.

In such a prior art system, many things occur in advance and periodically to remove dark signal images from a CCD storage device. Specifically, as shown in Fig. 23 and as discussed on pages 1 and 2, a refresh voltage is output at a time T1 to a capacitor, wherein a time period T1 to T2 in which the refresh signal is equal to the refresh voltage is determined in advance so as to reduce the charge accumulated in the capacitor. This occurs during initialization. At the time T2, the refresh signal is output to the capacitor and after the refresh process, the accumulated charge on the capacitor is swept out at the time T3. Again, the time T3 is determined in advance to sufficiently reduce the dark current. This is the refresh process.

In paragraphs [0023] and [0024], an idle read process is also referenced, which occurs from the time period T3 to T5. Again, this time period from T3 to T5 is determined in advance, to sweep out charges accumulated on the capacitor due to the dark current accumulation. Both the refresh process and idle read process occur during initialization are repeated periodically.

Distinctions over Prior Art

Applicant respectfully submits that in Example Embodiments of the Present Application, additional read-out processes need to occur at irregular intervals, which is not contemplated by the Tamura '813 publication.

Specifically, with regard to claim 1, Applicant respectfully submits that the Tamura '813 publication does not teach or suggest the system control as set forth in independent claim 1. Specifically, as claimed in claim 1, if an external trigger pulse occurs when no CCD read-out is to take place, a read-out of the CCD camera without useful information occurs; and when a trigger pulse is received when CCD read-out is to take place, read-out of the CCD without useful information is suppressed. To the contrary, anytime a request signal is received as set forth in paragraphs [0044] and [0045] of the Tamura '813 publication, the refresh and idle read processes are immediately executed. There is no correlation between an external trigger signal and whether or not a CCD read-out does or does not take place. There is some mention of the refresh and idle read processes periodically being repeated during an initialization process (when no X-ray photographing is made) in paragraph [0037], but this only has to do with the initialization process and nothing else. As such, the Tamura '813 publication will not be able to solve any problems of reading out "dark type" signals at anything but regular intervals. Further, this still does not establish a connection to CCD read-out, as required by the claims.

Somewhat similarly, with regard to claim 17, the Tamura '813 publication fails to teach or suggest at

least providing a read-out of the CCD camera without a desired signal before an exposure of the CCD camera when an external trigger pulse is generated at a time when no read-out of the CCD camera is to take place; and for suppressing a read-out without a desired signal before exposure of the CCD camera when an external trigger pulse is generated at a time when a read-out of a CCD camera is to take place.

Accordingly, for at least such reasons, withdrawal of the rejections of independent claims 1 and 17, and all claims dependent thereon, is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

The Examiner has rejected claims 4 and 7-9 under 35 U.S.C. § 103(a) as being unpatentable over the Tamura '813 publication and further in view of Haaker et al. (U.S. Patent No. 5,117,446; the Haaker '446 patent). Applicant respectfully submits that even assuming *arguendo* that the references could be combined, which Applicant does not admit, the teachings of the Haaker '446 patent would still fail to makeup for at least the previously mentioned deficiencies of the Tamura '813 publication. Accordingly, for at least the reasons set forth above regarding independent claims 1 and 17, Applicant respectfully submits that each of the claims is allowable over the alleged combination of the Tamura '813 publication and the Haaker '446 patent, even assuming *arguendo* that they could be combined.

Claims 5 and 10-16

Applicant notes that claims 5 and 10-16 have not been rejected over prior art. Accordingly, Applicant respectfully accepts that claims 5 and 10-16 would be

allowable if rewritten to overcome the Examiner's rejections under 35 U.S.C. § 112, second paragraph, and rewritten into independent form. As Applicant believes that independent claims 1 and 17 are allowable in their current form, however, no further amending to claims 5 and 10-16 have been made at this time.

New Claims

Applicant has further added new claims 21-24 in connection with the present application. New claims 21-24 set forth that the external trigger pulses are generated in a non-predetermined or non-periodic fashion. At least such a feature is also not taught or suggested by the prior art of record, taken either singularly or in combination. Accordingly, these claims are allowable for the reasons set forth therein, and are further allowable for the reasons previously set forth regarding independent claims 1 and 17.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-24 in connection with the present application is earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant hereby petitions for a one (1) month extension of time for filing a reply to the outstanding Office Action and submit the required \$120.00 extension fee herewith.

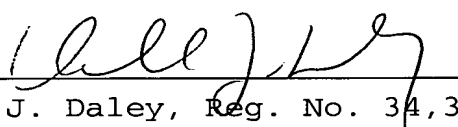
If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the telephone number listed below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKY & PIERCE, P.L.C.

By:


Donald J. Daley, Reg. No. 34,313

DJD:bof

P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000